

Nicholas Vadivelu

nicholasvadivelu.com
github.com/n2cholas
nicholas.vadivelu@gmail.com

Experience	NVIDIA · Performance Software Engineering Intern <i>Aug 2020 – Present</i> <ul style="list-style-type: none">Optimizing sparse BERT inference performance for TensorRT in C++, enabling a potential 50% reduction in inference time, memory usage, and power usage for customers Google Brain · Software Engineering Intern <i>May 2019 – Aug 2019</i> <ul style="list-style-type: none">Unlocked K-FAC for over 370,000 users by implementing and open sourcing automatic support for arbitrary neural network architectures and integrating it into the Keras ecosystemEnabled simple multi-node, multi-GPU/TPU training for users by incorporating TensorFlow's Distribution Strategy and efficient distributed operation placementDesigned, created, and open-sourced idiomatic, reproducible training recipes for users, carefully considering hyperparameter ranges, baselines, datasets, and models Uber ATG · Research Intern <i>Jan 2020 – Aug 2020</i> <ul style="list-style-type: none">Improved object detection by 90% (AP) and motion forecasting by 22% (L2) of a self-driving neural net under realistic positional error, significantly improving safety for future ridersWrote a first author paper on the learned positional error correction system (under review) John Hancock Financial · Data Science Intern <i>May 2018 – Aug 2018</i> <ul style="list-style-type: none">Achieved a fraud detection rate of 63% through designing an unsupervised ML modelDeployed 25 fraud identifying rules in SQL, which evaluated 20,000+ and flagged 100+ claims Sunnybrook Research Institute · Software Developer Intern <i>Jul 2017 – Aug 2017</i> <ul style="list-style-type: none">Improved MRI segmentation accuracy by up to 80% and reduced time to contour MRI scans from ~5 hrs to ~40 mins by implementing techniques like watershed, clustering, and more
Open Source	PyTorch Ignite : Improved performance by up to 63% by designing and implementing async updates for distributed metrics with tests and documentation
Projects	Thrive Life Simulator : Wrote a 3D ray-casting game engine from scratch for a dinosaur world simulation game in Java with object-oriented design and detailed documentation PixelShot 300 : Built a one-pixel camera from scratch capable of capturing a 300x300 photo using techniques such as proto-threading in Arduino and Java Vim Clone : Recreated the text editor using object-oriented design and C++ best practices, such as implementing the Model-View-Controller pattern and extensively using STL functionality
Leadership	Data Science Club Lectures : Designed and presented workshops about neural networks in TensorFlow , machine learning in scikit-learn , and data cleaning in pandas for 300+ students WATonomous Design Team : Implemented real-time object detection in Tensorflow , OpenCV
Education	University of Waterloo · Computer Science & Statistics (B. Math) <i>2022</i> Cumulative GPA: 3.94/4.00 - Dean's List <ul style="list-style-type: none">Research (Prof. Lin Tan): Proposed and implemented deep learning methods to identify bugs in codeResearch (Prof. Pascal Poupart): Investigated practical second order optimization methods for NNs